Fig. 1

Fig. 2

Ia.

IIa.

Ib.

IIb.

Fig. 3

Fig. 4

Fig. 5

Demand on spotting of color
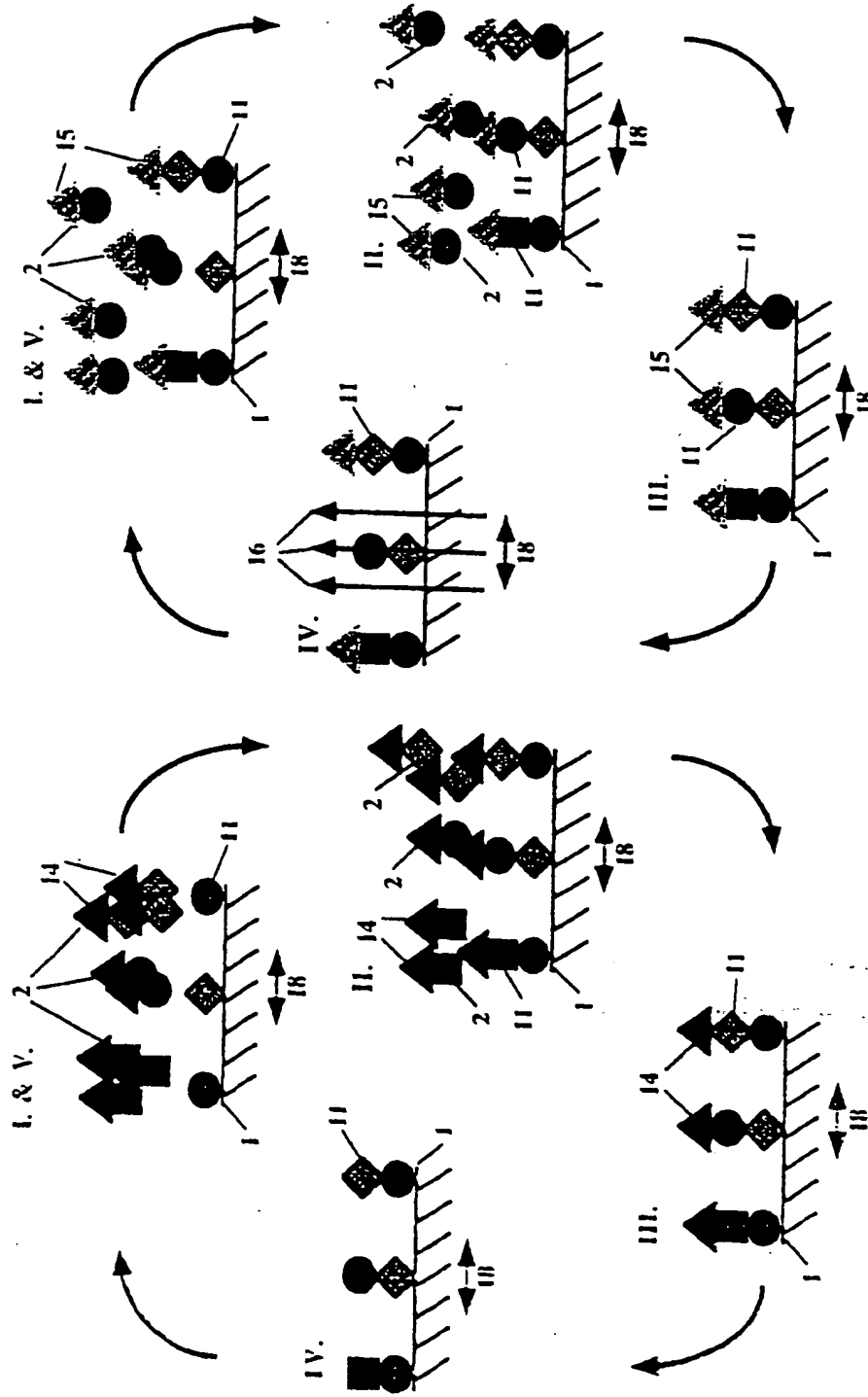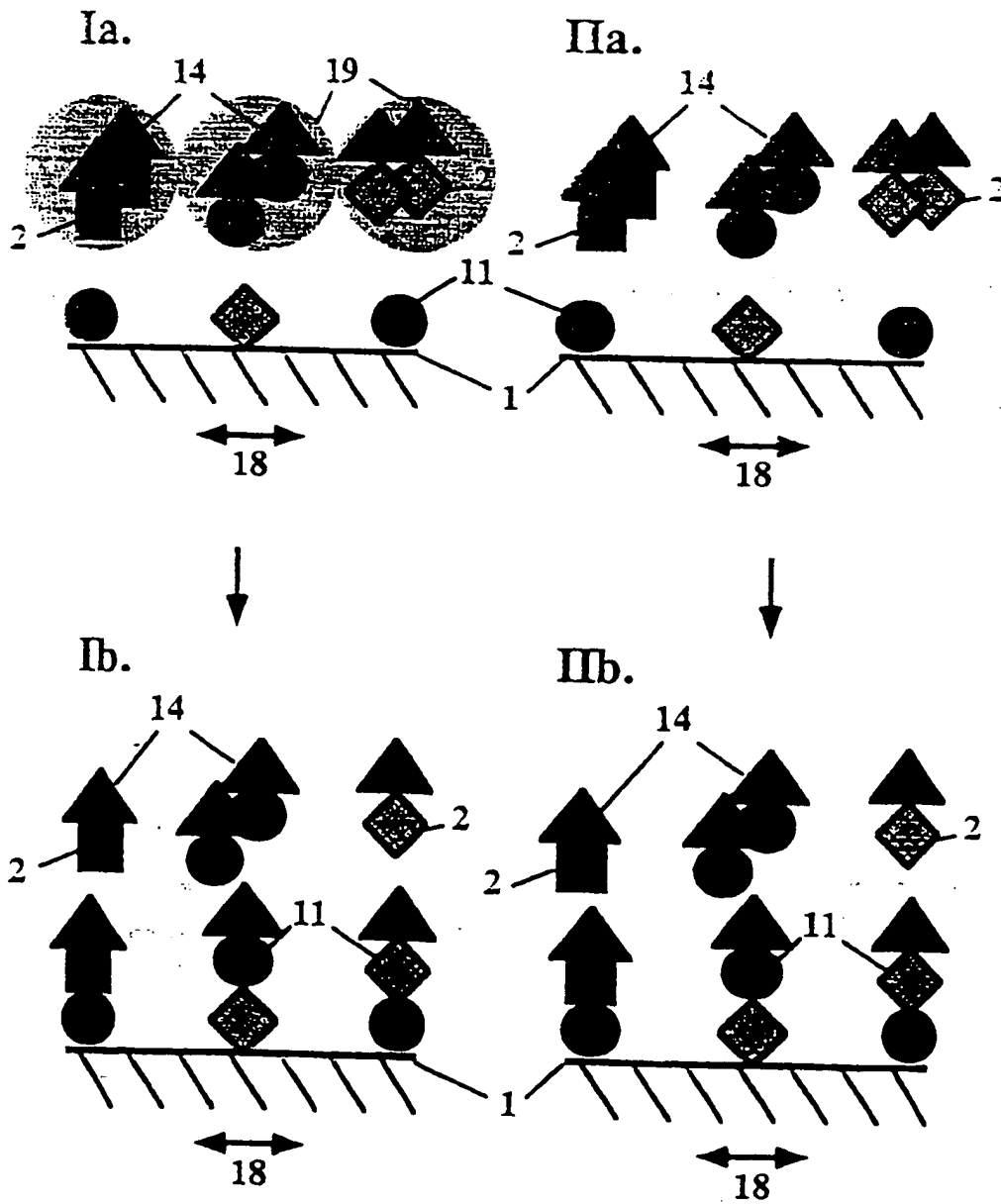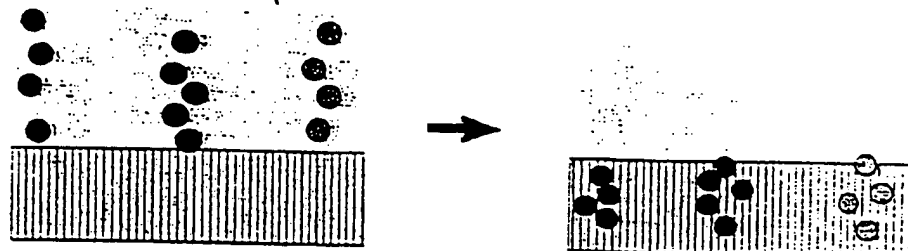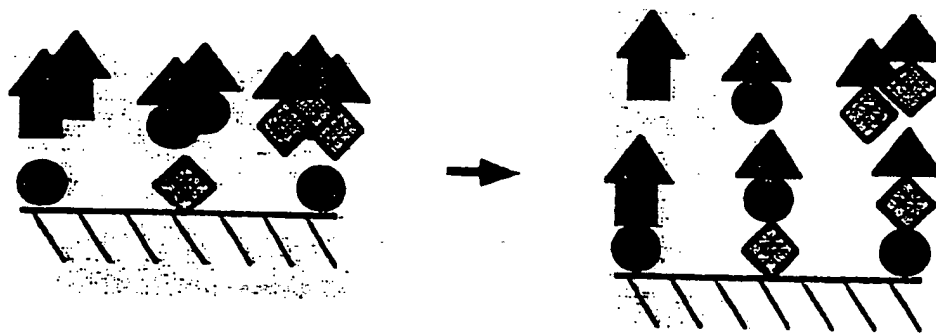

- Low diffusion rate of the large chromphors
- Rapidly evaporating solvent
- Absorbent paper

Demand on spotting of monomers for the combinatorial synthesis

- High diffusion rate of small monomers
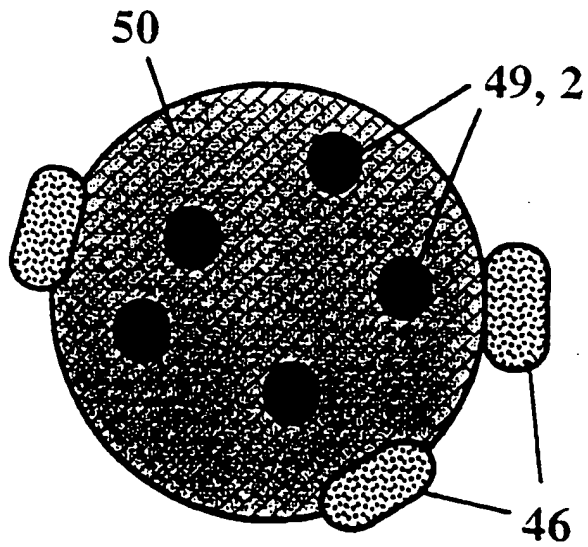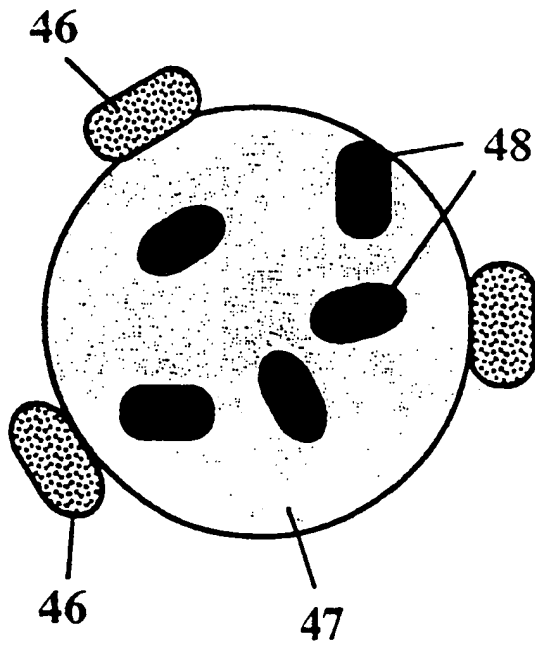- Very slowly evaporating solvent

Fig. 6

Fig. 7

Fig. 8

Fig. 9

ca 20cm

ca 30cm

DinA4 Page
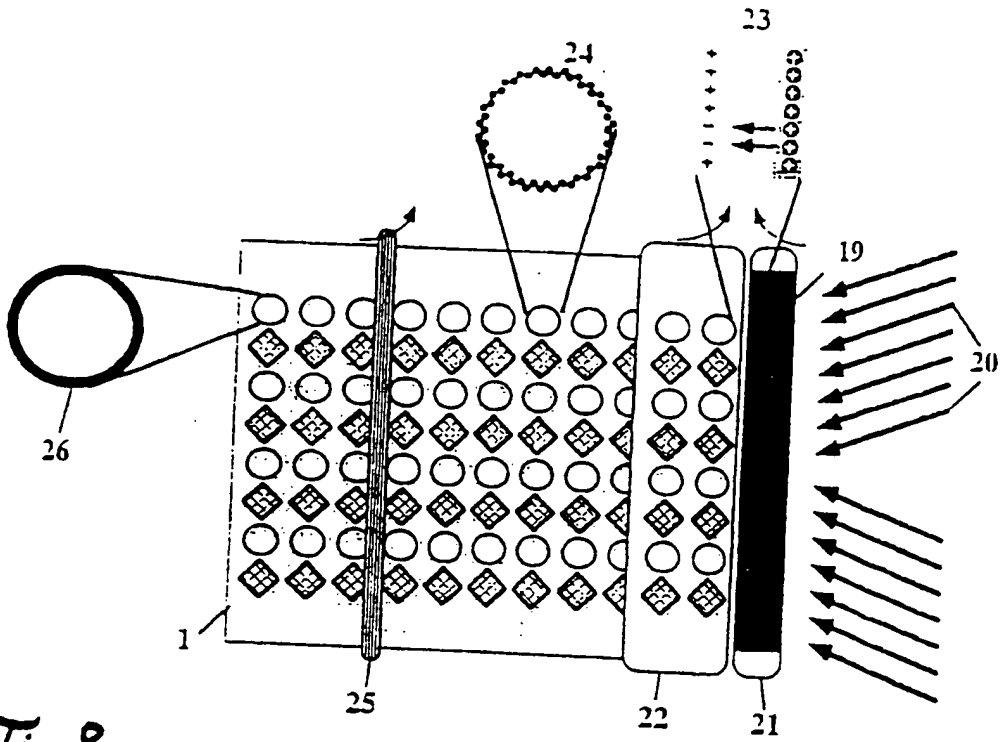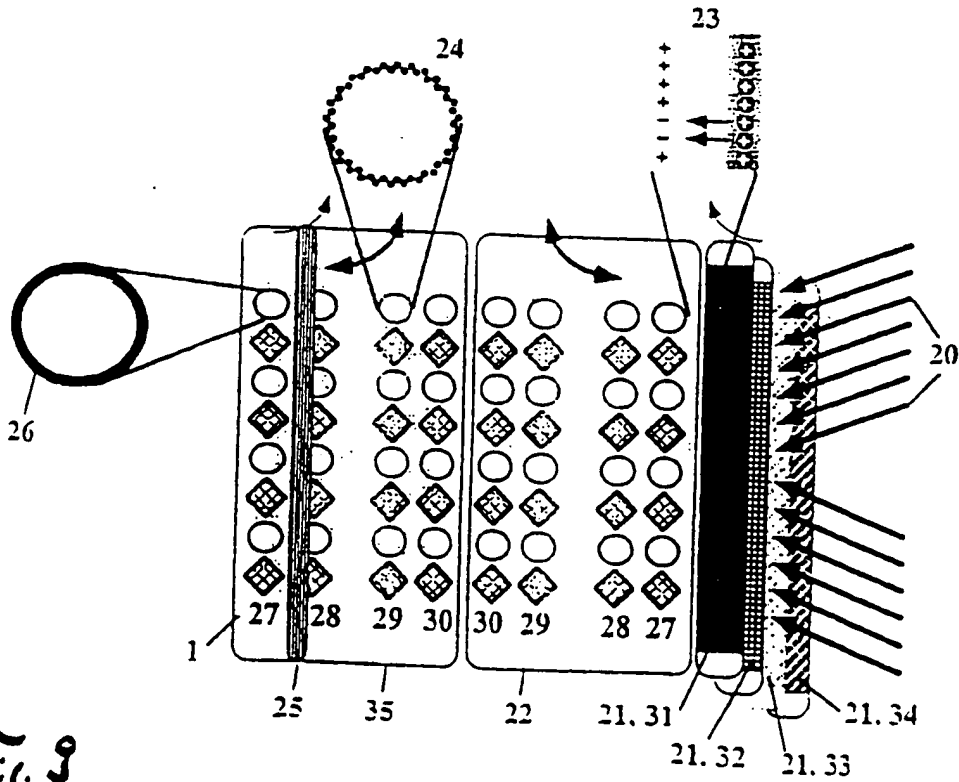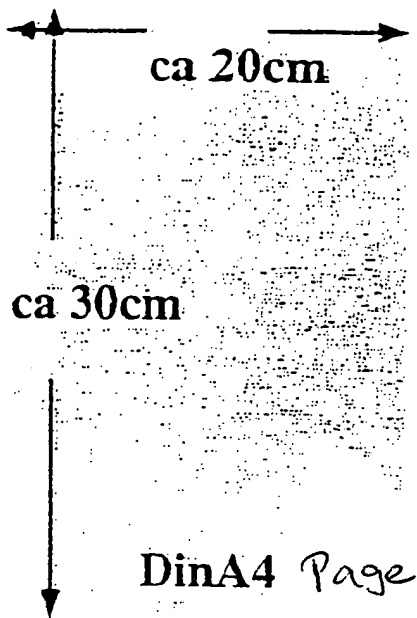
600 dpi = 600 dots per inch

600 dpi = ca 1 dot all 40μm

1.200 dpi = ca 1 dot all 20μm

2.400 dpi = ca 1 dot all 10μm

4.800 dpi = ca 1 dot all 5μm

Dots per DinA4 Page:

600 dpi = ca 5.000 x 7.500 = ca 30 millions · dots

1.200 dpi = ca 10.000 x 15.000 = ca 125 millions dots
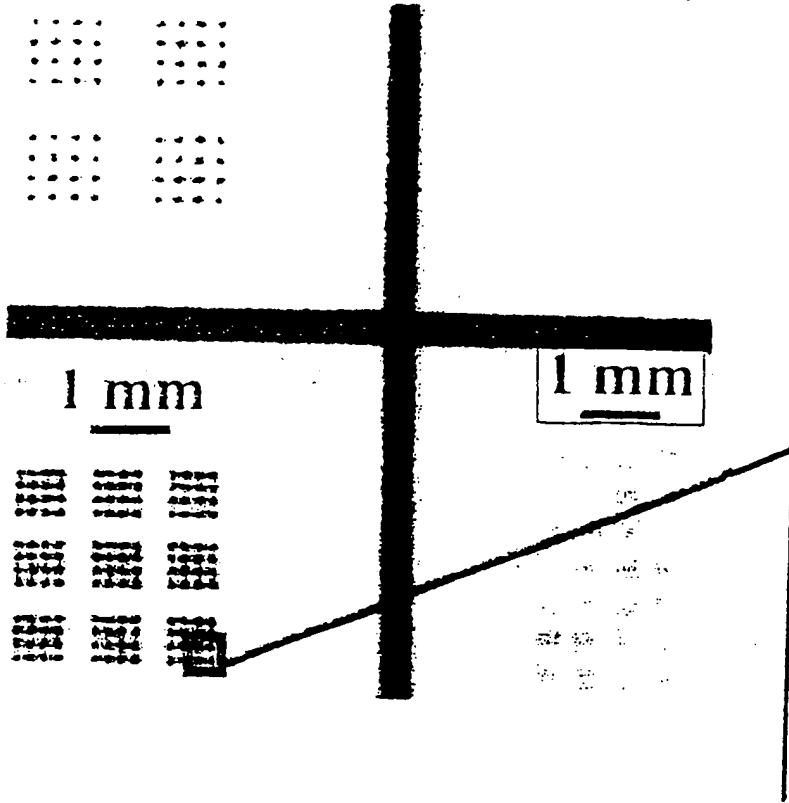
2.400 dpi = ca 20.000 x 30.000 = ca 500 millions dots

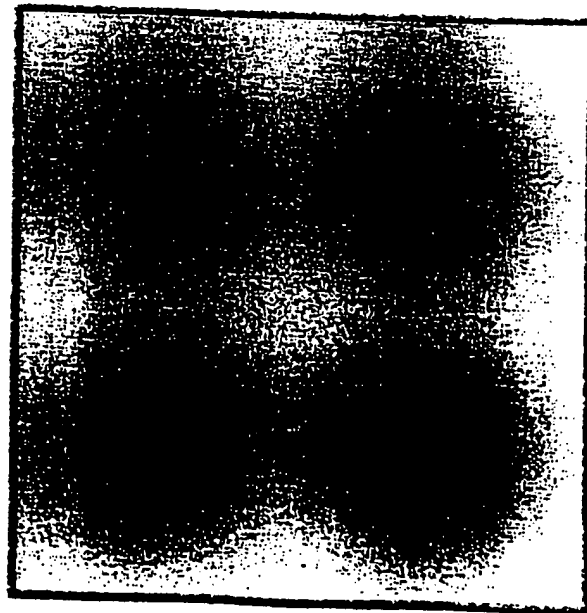4.800 dpi = ca 40.000 x 60.000 = ca 2 milliards dots

Fig. 10

Laser Printer with **600dpi**

Scanner

Fig. 11

50 μm

Heptamers
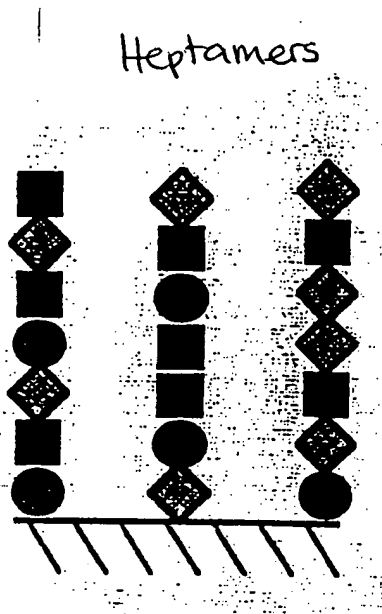
$20^1 = 20$ different amino acids

$20^2 = 400$ different dipeptides

$20^3 = 8.000$ different tripeptides

$20^4 = 160.000$ different tetrapeptides

$20^5 = 3,2$ millions different pentapeptides

$20^6 = 64$ millions different hexapeptides

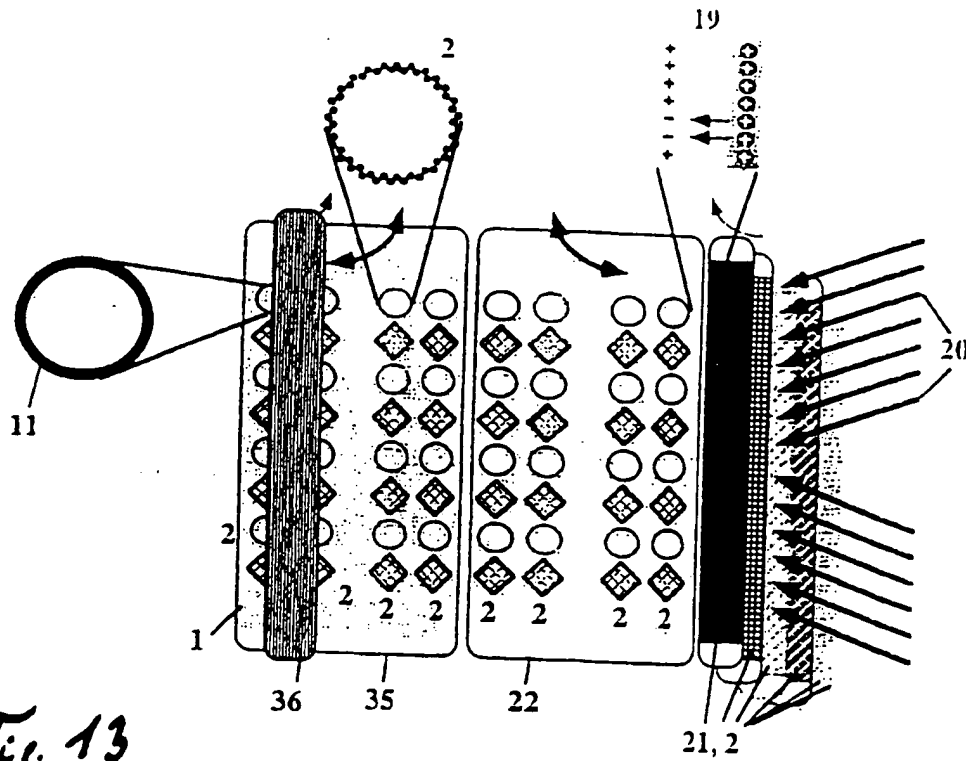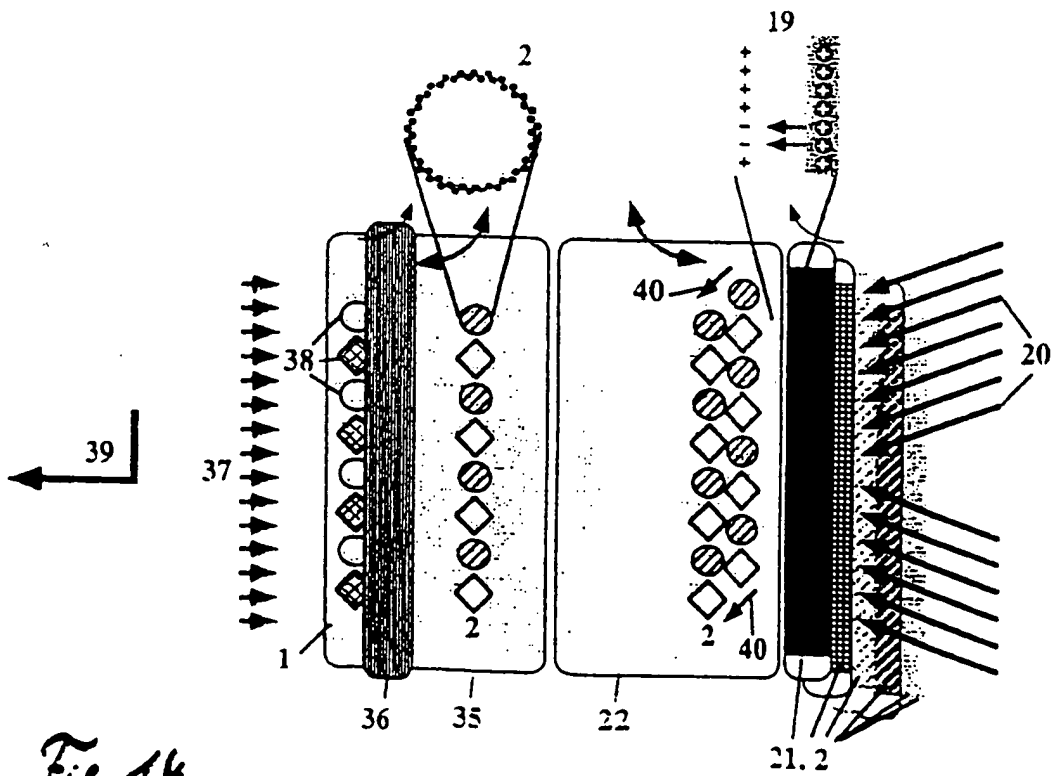$20^7 = 1.280$ millions different heptapeptides

Fig. 12

Fig. 13

Fig. 14

NH₂ X X X X N N N X X
X X N X X COOH

complete tripeptide library:
$= 20^3 = 8.000$ different peptide

NH₂ X X X N N X X
X X N N X COOH

complete tetrapeptide library:
$= 20^4 = 160.000$ different peptide

NH₂ X X N N N X X
X X N N X COOH

complete pentapeptide library:
$= 20^5 = 3,2$ millions different peptide

NH₂ X X N N N X X
X N N N X COOH

complete hexapeptide library:
$= 20^6 = 64$ millions different peptide

N = set amino acid position
X = Mixture of 20 different amino acid

Fig. 15

Fig. 16
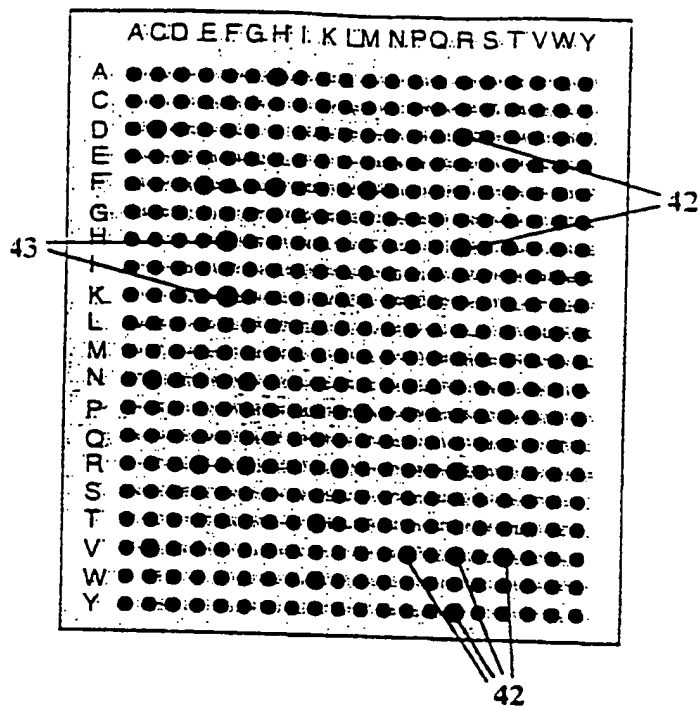

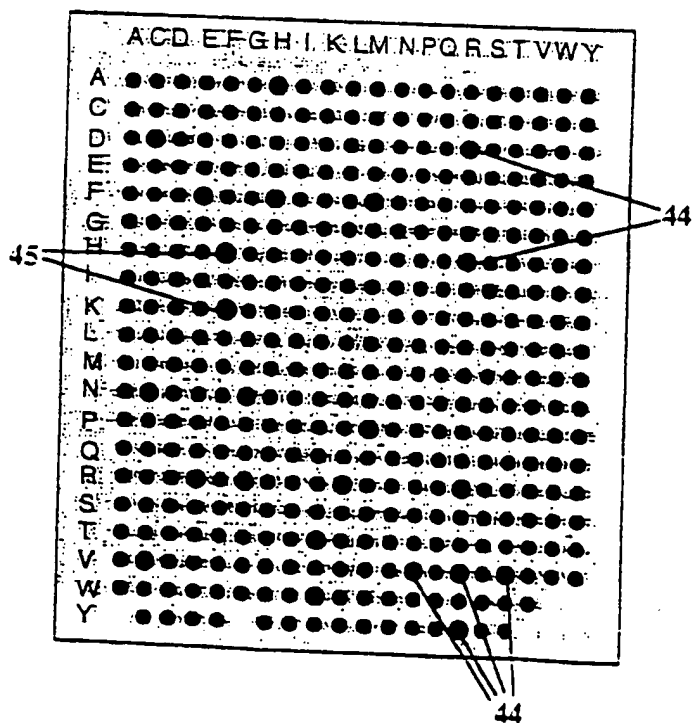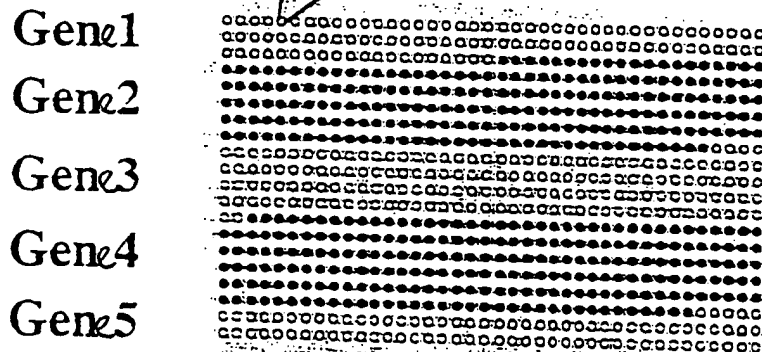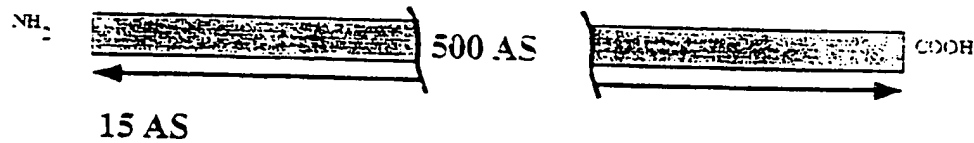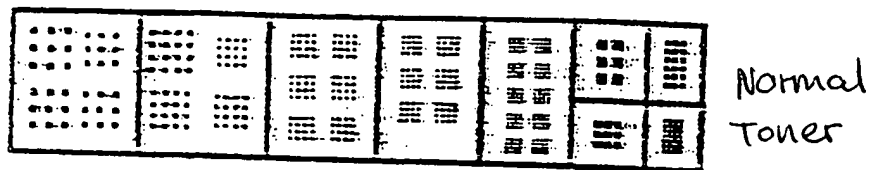*Fig. 18*

Required peptides per Gene (ca 500 AS):
= ca 100 x 15mere (per 5 AS added)
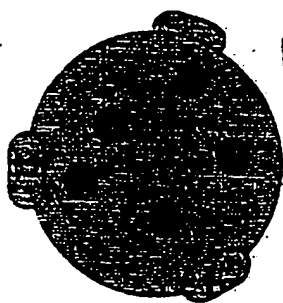
Number of human Genes:
= ca 100.000

Required peptides to cover all Genes:
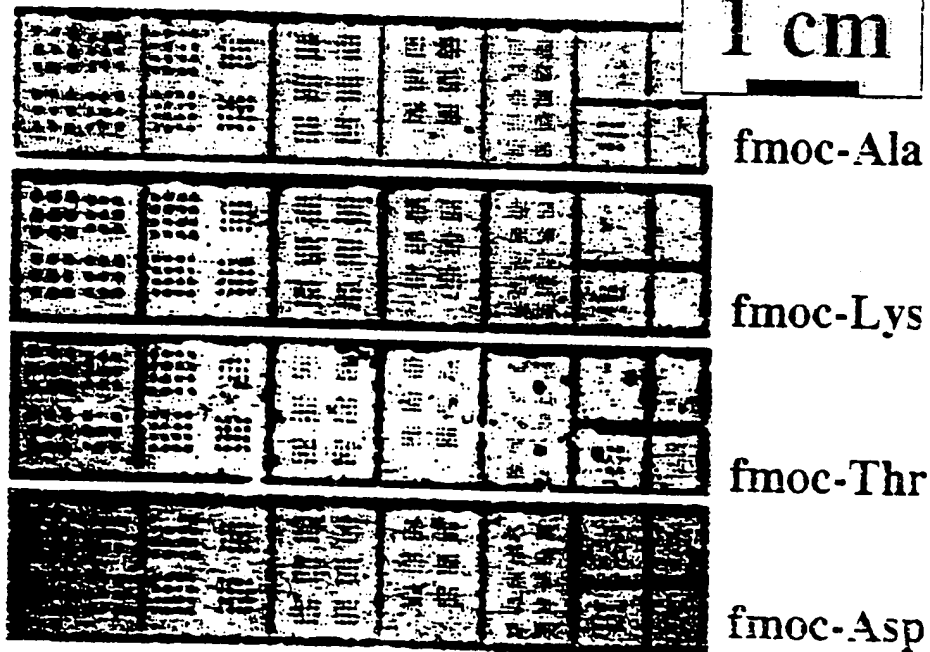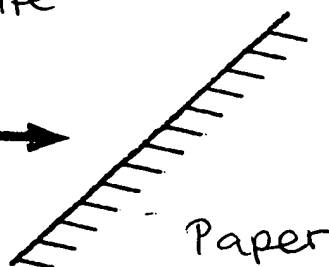= 100 x 100.000 = ca 10 millions

Fig. 17

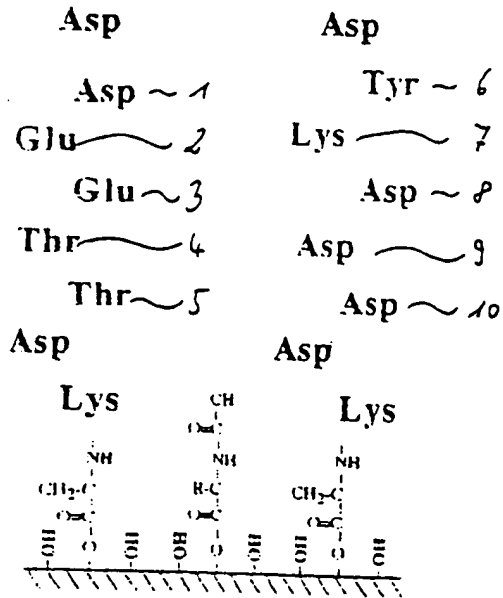Normal Toner

fmoc-amino acid

Magnetite

Paper

1 cm

fmoc-Ala

fmoc-Lys

fmoc-Thr

fmoc-Asp

Fig. 19

A

syntheticed peptides

Asp   Asp

  Asp ~ 1   Tyr ~ 6
Glu ~ 2   Lys ~ 7
  Glu ~ 3   Asp ~ 8
Thr ~ 4   Asp ~ 9
  Thr ~ 5   Asp ~ 10

Asp   Asp

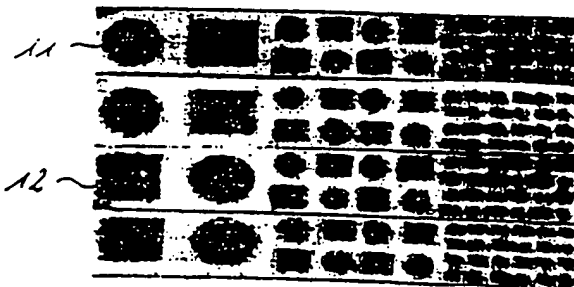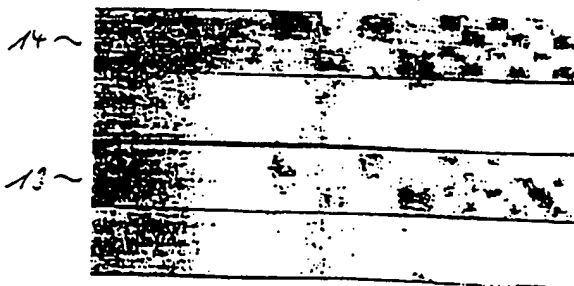Lys   Lys

B

Front side

11 ~   anti-FLAG antibody
         anti-Aktin antibody
12 ~   anti-FLAG antibody
         anti-Aktin antibody

Back side

14 ~   anti-FLAG antibody
         anti-Aktin antibody
13 ~   anti-FLAG antibody
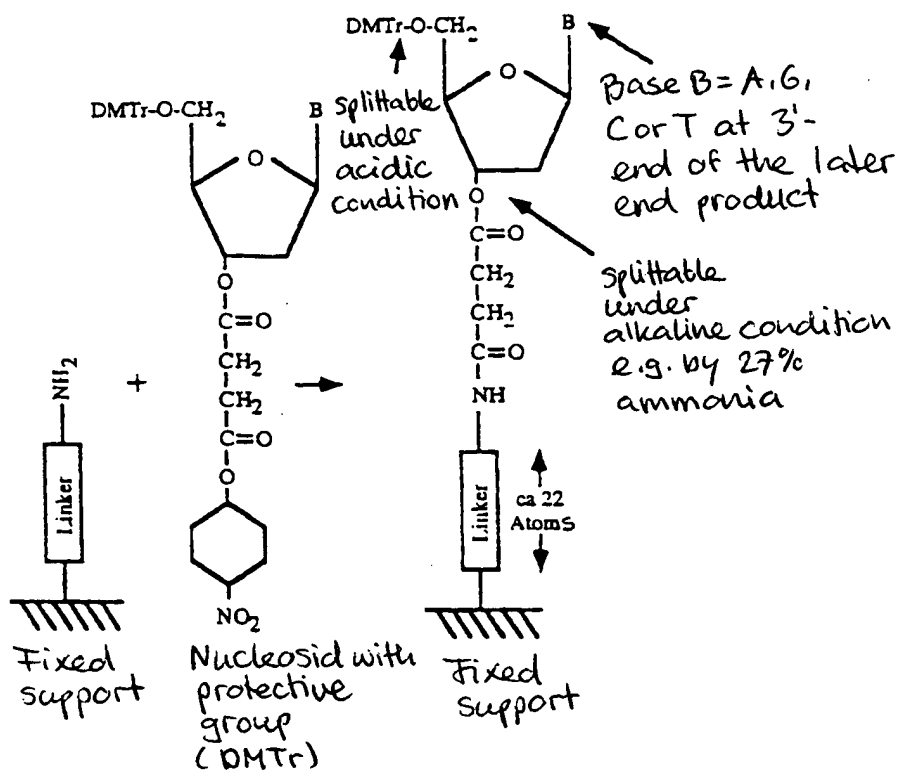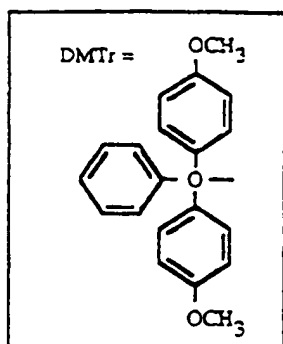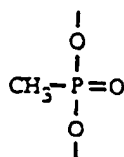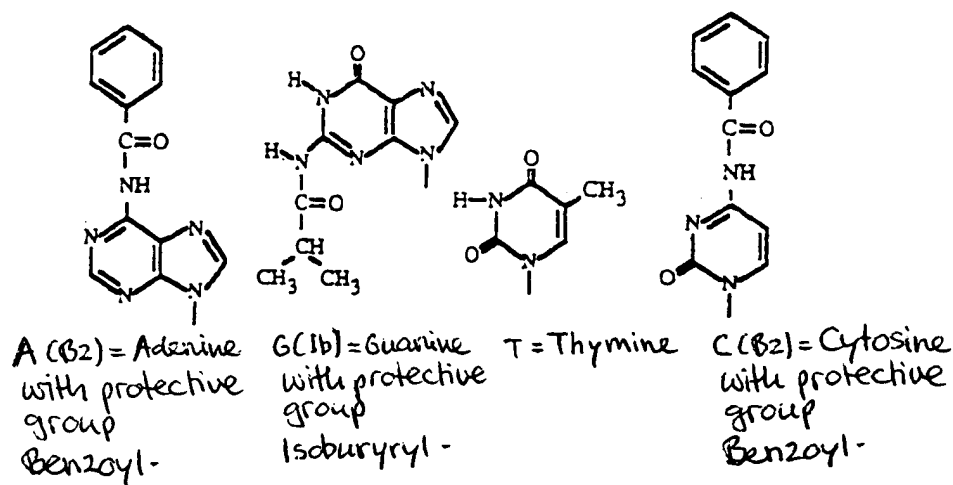   anti-Aktin antibody

Fig. 20

DMTr = OCH₃ ... OCH₃

DMTr-O-CH₂ — B   Splittable under acidic condition

DMTr-O-CH₂ — B   Base B = A, G, C or T at 3'-end of the later end product

splittable under alkaline condition e.g. by 27% ammonia

Linker — NH₂   +   →   Linker — NH   ca 22 Atoms

Fixed support

Nucleosid with protective group (DMTr)

Fixed support

Fig. 21

A (B2) = Adenine with protective group Benzoyl-

G (Ib) = Guanine with protective group Isobutyryl-

T = Thymine

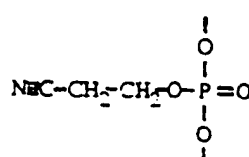C (B2) = Cytosine with protective group Benzoyl-

CH₃—P=O   Phosphorus group with protective group Methoxy-

NEC—CH₂—CH₂O—P=O   Phosphorus group with protective group Beta-cyanoethyl

Fig. 22

Free 5'-OH-end, which has not reacted

Can no longer react

acetic anhydride

Fig. 23

Fig. 24

Fixed support

Ia.

1

6

3, 4

2

5, 7

Ib.

1

6

3, 4, 12

2

5, 13

II.

1

2

3, 4

7

III.

1

2, 9

3, 4

10

8

IV.

1

2, 11

2

3, 4

8

Fig. 25